

AMENDMENTS TO THE CLAIMS:

1. (Previously Presented) A driving assist system for a vehicle, comprising:

a state recognition device that detects a vehicle condition and a traveling environment of a subject vehicle;

future state prediction device that predicts future driving conditions, the predicting including calculating at least one of a current degree of proximity to a preceding vehicle and an extent of influence on the subject vehicle due to future changes in surrounding environment, the calculating being based on detection results of the state recognition device

a risk potential calculating device that calculates risk potential around the subject vehicle based on the future driving conditions predicted by the future state prediction device and a driver's intentions.

2. (Original) A driving assist system for a vehicle according to claim 1, further comprising:

a reaction force calculating device that calculates an operation reaction force to be generated in a vehicle operating unit according to the risk potential calculated by the risk potential calculating device; and

a reaction force generating device that generates the operation reaction force calculated by the reaction force calculating device in the vehicle operating unit.

3. (Original) A driving assist system for a vehicle according to claim 2, wherein:

the vehicle operating unit is an accelerator pedal;

the reaction force calculating device calculates the operation reaction force to be generated in the accelerator pedal; and

the reaction force generating device generates the operation reaction force in the accelerator pedal.

4. (Original) A driving assist system for a vehicle according to claim 1, further comprising:

a warning system that outputs a warning according to the risk potential calculated by the risk potential calculating device.

5. (Original) A driving assist system for a vehicle according to claim 1, wherein:
the risk potential calculating device estimates the driver's intentions from acceleration and deceleration of the subject vehicle to calculate the risk potential.

6. (Original) A driving assist system for a vehicle according to claim 1, wherein:
the risk potential calculating device estimates the driver's intentions from acceleration and deceleration of the subject vehicle and the preceding vehicle to calculate the risk potential.

7. (Original) A driving assist system for a vehicle according to claim 1, wherein:
the state recognition device detects the vehicle condition and the traveling environment of the subject vehicle including a subject vehicle speed, a preceding vehicle speed, and a distance between the subject vehicle and the preceding vehicle;

the future state prediction device calculates a time headway based on one of a set of the distance between vehicles and the subject vehicle speed and a set of the distance between vehicles and the preceding vehicle speed as the extent of influence due to changes in the surrounding environment; and

the risk potential calculating device calculates the risk potential based on a reciprocal of the time headway.

8. (Original) A driving assist system for a vehicle according to claim 7, wherein:
the risk potential calculating device calculates the risk potential based on a linear sum of the reciprocal of the time headway and a time differentiated value of the reciprocal of the time headway.

9. (Original) A driving assist system for a vehicle according to claim 7, wherein:
the risk potential calculating device calculates based on a linear sum of the reciprocal of the time headway, a time differentiated value of the reciprocal of the time headway, and a twice differentiated value of the reciprocal of the time headway.

10. (Original) A driving assist system for a vehicle according to claim 1, wherein:
the state recognition device detects the vehicle condition and the traveling environment of the subject vehicle including a subject vehicle speed, a preceding vehicle speed, and a distance between the subject vehicle and the preceding vehicle;

the future state prediction device calculates time to contact based on a relative speed and the distance between vehicles detected by the state recognition device as the degree of proximity to the preceding vehicle; and

the risk potential calculating device calculates the risk potential based on a reciprocal of the time to contact.

11. (Original) A driving assist system for a vehicle according to claim 10, wherein:
the risk potential calculating device calculates the risk potential based on a linear sum of the reciprocal of the time to contact, and a time integrated value of the reciprocal of the time to contact.

12. (Original) A driving assist system for a vehicle according to claim 10, wherein:
the risk potential calculating device calculates the risk potential based on a linear sum of the reciprocal of the time to contact, a time integrated value of the reciprocal of the time to contact, and a time differentiated value of the reciprocal of the time to contact.

13. (Previously Presented) A driving assist system for a vehicle, comprising:
a state recognition means for detecting a vehicle condition and a traveling environment of a subject vehicle;
a future state prediction means for predicting future driving conditions, the predicting including calculating at least one of a current degree of proximity to a preceding vehicle and an extent of influence on the subject vehicle due to future changes in surrounding environment, the calculating being based on detection results of the state recognition means; and

a risk potential calculating means for calculating risk potential around the subject vehicle based on the future driving conditions predicted by the future state prediction means and a driver's intentions.

14. (Previously Presented) A vehicle, comprising:

a vehicle operating unit;

a state recognition device that detects a vehicle condition and a traveling environment of a subject vehicle;

a future state prediction device that predicts future driving conditions, the predicting including calculating at least one of a current degree of proximity to a preceding vehicle and an extent of influence on the subject vehicle due to future changes in surrounding environment, the calculating being based on detection results of the state recognition device

a risk potential calculating device that calculates risk potential around the subject vehicle based on the future driving conditions predicted by the future state prediction device and a driver's intentions;

a reaction force calculating device that calculates an operation reaction force to be generated in the vehicle operating unit according to the risk potential calculated by the risk potential calculating device; and

a reaction force generating device that generates the operation reaction force calculated by the reaction force calculating device in the vehicle operating unit.

15. (Previously Presented) A method for calculating risk potential, comprising:

detecting a vehicle condition and a traveling environment of a subject vehicle;

predicting future driving conditions by calculating at least one of a current degree of proximity to a preceding vehicle and an extent of influence on the subject vehicle due to future changes in surrounding environment based on the vehicle conditions and the traveling environment having been detected; and

calculating the risk potential around the subject vehicle based on the predicted future driving conditions and a driver's intentions.

16. (Original) A method for calculating risk potential according to claim 15, wherein:
a time headway is calculated based on one of a set of a distance between the subject vehicle and the preceding vehicle and a subject vehicle speed and a set of the distance between vehicles and a preceding vehicle speed as the extent of influence due to changes in the surrounding environment; and

the risk potential is calculated based on a linear sum of a reciprocal of the time headway and a time differentiated value of the reciprocal of the time headway.

17. (Original) A method for calculating risk potential according to claim 15, wherein:
a time headway is calculated based on one of a set of a distance between the subject vehicle and the preceding vehicle and a subject vehicle speed and a set of the distance between vehicles and a preceding vehicle speed as the extent of influence due to changes in the surrounding environment; and

the risk potential is calculated based on a linear sum of a reciprocal of the time headway, a time differentiated value of the reciprocal of the time headway, and a twice differentiated value of the reciprocal of the time headway.

18. (Original) A method for calculating risk potential according to claim 15, wherein:
time to contact is calculated based on a relative speed and a distance between the subject vehicle and the preceding vehicle as the degree of proximity to the preceding vehicle; and
the risk potential is calculated based on a linear sum of a reciprocal of the time to contact and a time integrated value of the reciprocal of the time to contact.

19. (Original) A method for calculating risk potential according to claim 15, wherein:
time to contact is calculated based on a relative speed and a distance between the subject vehicle and the preceding vehicle as the degree of proximity to the preceding vehicle; and
the risk potential is calculated based on a linear sum of a reciprocal of the time to contact, a time integrated value of the reciprocal of the time to contact, and a time differentiated value of the reciprocal of the time to contact.

20. (New) The system of claim 1, wherein the future driving conditions is predicted by calculating the extent of influence on the subject vehicle due to future changes in surrounding environment.